

- Replacement 3 -

timeslot of a TDMA frame. Said BCCH can be compared with a radio beacon of the base transceiver station, wherein via said BCCH the first contact between the mobile station and the base transceiver station is established. The BCCH is  
5 also used to inform the mobile station about access parameters and the like and to enable a position determination.

On the other hand, a handover can also be required in the  
10 case, that there is too much traffic in the corresponding cell. Each cell has a limited number of traffic channels (TCH) used for data exchange or speech transmission. If a subscriber wants to make a call but no more TCH is available because of too many currently active calls, a  
15 handover is performed to another cell with an available TCH, even if measurement of, e.g., signal strength results in a lower value for this new cell.

It is to be noted, that a handover procedure can be  
20 executed during a call setup phase and during an active call.

However, as only a limited number of channels is available, a permanent transmission of a channel like said BCCH is  
25 wasteful in terms of the radio communication resources of the communication network.

Additionally, each of the base transceiver stations of the communication network has permanently to be turned on to  
30 transmit said BCCH, even if there is no mobile station present within its coverage area. This results in an unnecessary power waste.

Document US 5,546,445 describes a method and a system in  
35 which both a position controlled system and a signal strength system are included in a cellular system, a mobile

telecommunications switching office can include a software system in a memory to use the position controlled system, but to also test signal strength, and to use a signal strength controlled system if a signal still falls below a predetermined value when making call management decisions based on the position of a mobile unit.

Document WO 99/07167 concerns a geographical restriction in a cellular telecommunication network. There is disclosed a method for performing a handover in which tariff related information are taken into consideration.

Document WO 93/19560 describes a method for performing a handover in which a serving base transceiver stations seeks base transceiver stations for a handover which are not adjacent to the serving base transceiver station.

Document DE 197 41 701 A1 describes a method and a device for a handover of a mobile station in a mobile radio system. A base station is connected to a radio positioning system and receives positioning signals. Coordinates of a mobile station are calculated on the basis of the coordinates of the base stations communicating with the mobile station and a distance between the mobile station and the base stations.

#### SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to provide an improved method which enables to perform a handover procedure while maintaining a better use of available radio resources, and to provide a correspondingly improved device for performing said handover procedure.

According to the present invention, this object is achieved by a method for performing a handover procedure for a

mobile station communicating in a communication network and being movable therein, said communication network comprising a plurality of base transceiver stations being adapted to perform a communication with said mobile station within its coverage area, said method comprising the steps of processing location information related to the mobile station by comparing it with position information related to the base transceiver stations, deciding on the basis of the result of said processing, whether a first handover condition is fulfilled, and checking subscriber specifications concerning another measurement for a handover, designating a next base transceiver station in said communication network, to which the communication with said mobile station is to be directed from a current base transceiver station, when the first handover condition is fulfilled, triggering a handover of the communication connection of the mobile station from the current base transceiver station to the next base transceiver station designated in said designating step, and performing the handover.

Furthermore, the present invention proposes a device for controlling a handover procedure for a mobile station communicating in a communication network and being movable therein, said communication network comprising a plurality of base transceiver stations being adapted to perform a communication with said mobile station within its coverage area, said device comprising a processing means for processing location information related to said mobile station by comparing it with position information related to base transceiver stations, and for deciding on the basis of the result of said processing, whether a first handover condition is fulfilled, and for checking subscriber specifications concerning another measurement for a handover, a designating means for designating a next base transceiver station in said communication network, to which

- Replacement 5a -

the communication with said mobile station is to be switched from a current base transceiver station, when the first handover condition is fulfilled, and a triggering means for triggering a handover of the communication

- 5 connection of the mobile station from the current base transceiver station to the next base transceiver station designated by said designating means.

- 10 Advantageous further developments of the present invention are as set out in the respective dependent claims.

- According to the present invention, the proposed method and/or device use location information which is, for example, periodically determined to decide whether a  
15 handover is to be performed and to which base transceiver station the communication connection is to be changed. This allows the usage of base transceiver stations which do not transmit a broadcast control channel, since the handover is initiated by the corresponding network device, e.g., the  
20 base station controller BSC. This decreases the system interference level and increases the network capacity by reducing channels not directly used for communication.

- Furthermore, base transceiver stations can be used which  
25 can be turned off. Said base transceiver stations are only turned on by the corresponding base station controller when a mobile station is within the coverage area of said base transceiver stations. This saves costs and reduces power consumption.